

Barrier Free Park Design for the Disabled Persons: A Case Study of the KLCC Park

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Abstract

Making green spaces accessible to as many people as possible is now mainstream thinking in planning, design and management. Green spaces can be internal or external, integrated or separated with building. The purpose of this paper is to investigate and identify the characteristics in creating green spaces for the disabled persons¹ to enjoy. This research is dedicated specially for those with sensory disabilities, i.e. visually impaired² persons. The research will focus on issues and constraints that seem to impede their basic necessity, which is a barrier to them in enjoying the green spaces alongside their sighted peers. However, this research can also be applied to other users such as children, elderly people, pregnant women and parent with strollers. An example of a case study selected is the Kuala Lumpur City Centre (KLCC) Park, where the author will explore the objectives and design principles of the Park. The findings are intended to provide recommendation on appropriate design criteria for the visually impaired persons in helping to maintain and manage green spaces. This is also to provide general information on different type of plants, highlighting their value and use in design as advised by landscape architects.

Keywords: Accessibility, Green Spaces, Visually Impaired

Introduction

'It is the firm conviction of virtually every group representing interests of disabled people that all facilities, including landscape, should be designed to provide universal access' (Stoneham and Thoday, 1996(b)).

The above statement is a reflection of the importance of accessibility in particular to the design of green spaces. Due to lack of understanding about the built environment in combination with the natural environment, green spaces are being abused and neglected.

Green spaces such as public parks and gardens have been associated for more than a century with pleasures, providing a green

oasis in the city. Besides landscape architects, architects, professional buildings and property management should also be aware of the considerable debate over the current and future role of green spaces and whether they meet the needs of all sections of society. According to Spurgeon (1996), behind such considerations is the basic idea

¹ Disabled person means an individual who has physical or mental impairment that substantially limits one or more of her/his major life activities (Disability-Related Terms and Definitions, 2004 (a)).

² Visually impaired are persons who rely solely on their sense of hearing, touch and smell (Disability-Related Terms and Definitions, 2004(b)).

that green spaces must be accessible, safe and offer both comfort and maximum enjoyment.

Designers, planners and managers ought to be more concerned and sensitive in providing the due respect and consideration for the visually impaired persons. The awareness is enhanced by offering amenities such as having proper designed walkways with ramps and railings, accessible public toilets and usable telephone booths in green spaces. The built environment must also incorporate certain aspects of sound, texture and aroma to assist the visually impaired persons in their surrounding. Knowing the basic necessity of the visually impaired persons will assist the designers, planners and managers to improve the built environment.

Based on the study, the intention of this research is to investigate and identify the criteria for designing, maintaining and managing green spaces that everyone can enjoy. If anyone were to ask whether there is a thing called 'green spaces for the disabled persons' right now, the answer would be 'no, there is not'. Here and there, are campaigns towards a garden nation by 2005 (Yeang, 2000). It is definitely a good effort of sustainability and conservation; however, there is still lack of public awareness concerning this matter. Hence, visually impaired persons are unable to participate equally in enjoying green spaces.

Green spaces should be accessible to all disabled persons to be an equal user in all activities that the place has to offer. Below are the objectives that should be met:

1. To include a 'barrier-free built environment' in green spaces, focusing on softscape³ and hardscape⁴; and
2. To identify issues, requirements and constraints of visually impaired persons in using green spaces.

To ensure the success of a green space, the identification of practical ideas is essential in the design process. With this consideration, the aim of this research is to achieve the agenda of promoting all green spaces to have a 'barrier-free built environment'⁵.

Research Methodology

Several methods are being employed in meeting these objectives. Data and evidence were collected by the use of two methods namely, literature surveys and questionnaires.

The research began by obtaining reliable information from literatures of related topic to provide the author with the knowledge of existing works on the subject and formulate a personal understanding on the issues, requirements and constraints in relation to 'barrier-free built environment'. It also assisted to develop research skills in identifying the keywords and to construct questionnaire surveys.

Data collections from literature reviews were found from recommended books, journals and research reports. Other important information was obtained by searching through the Internet Web pages that proved particularly useful in cases where such information would not be sufficiently available in library books or magazine articles.

³ Softscape means the natural elements such as plant materials, water features.

⁴ Hardscape means the man made elements such as hard surfaces, signages, etc.

⁵ 'Barrier-Free Built Environment' means unhindered, without obstructions, to enable disabled persons free passage to and from and use of the facilities in the built environment (Ministry of Housing and Local Government [1999] *Guidelines Requirements for Access into Public Buildings for Disabled Persons*, Kuala Lumpur)

Case Study: Kuala Lumpur City Centre Park (KLCC), Malaysia

More than ten years ago, the Malaysian Government was fully aware of the need for more green spaces in the city. As a result from that, the beautifully landscaped KLCC Park had come into reality. The Park was designed to showcase a heritage of tropical greenery by integrating man's creation with nature whilst offering a calm and harmonious environment in the midst of the hustle and bustle of a busy and dynamic city (refer figure 1).

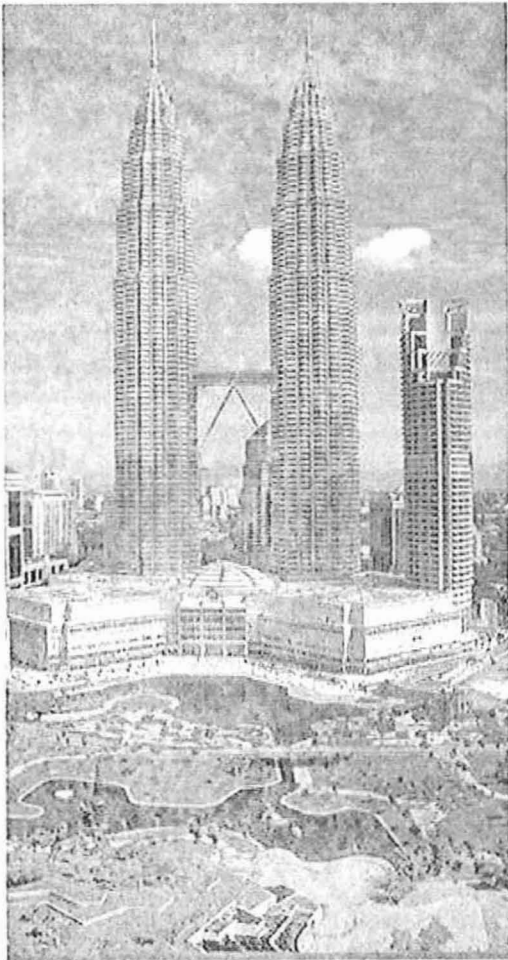


Figure 1:

The Kuala Lumpur City Centre Park with the Petronas Twin Tower in the background.

The case study will be analysed into five subjects as follows:

i. The Project.

KLCC is one of the largest, most prestigious real estate developments in the world and a proud symbol of Malaysia's multifaceted success. It is designed as a people's place; an ideal place to live, work, visit, relax and shop. Over half of the KLCC is a sixty-acre landscape public park designed by world famous landscape artist, the late Roberto Burle Marx. He was a great admirer of natural gardening and consistently sought to recreate the illusion of nature in urban green spaces whilst his philosophy and vision were always guided by the sensibilities of an artist (refer figure 2).



Figure 2:

A sixty-acre green space, which comprises water features, children playground, walkway and jogging track.

ii. The Master Plan

A team from KLCC Berhad is responsible for translating Burle Marx's vision into reality (refer figure 3). He has treated the Park as a work of art, where softscapes such as trees, palms, shrubs, creepers and climbers become an attractive composition of colour, form and texture. Much thought preceded in the selection of plants, with the intention of encouraging bio-diversity. He has interpreted the concept, which meets the objectives of a multi-use area using contours and hardscapes. The conservation factor

was another key consideration in the planning, maintaining and managing process. About twenty-three of the mature and rare specimens were saved from the former Selangor Turf Club and eventually transplanted on to the park grounds.



Figure 3:
KLCC Master Plan. Courtesy of Architectural Division Kuala Lumpur City Centre Berhad.

iii. The Intention

Tun Dr. Mahathir Mohamed, the former Prime Minister of Malaysia mentioned in the book *KLCC Park: A Unique Work of Art* (1998) that *'In many respects, the KLCC Park is very much a People's Park'*.

From the above statement, one of the intentions in designing the Park, which comparative to this research, is to be sensitive to the needs and desires of Malaysians from all ways of life and age groups.

iv. The Site

According to Hussain (1998), the KLCC Park was zoned into three distinctive areas, i.e. the Active area, the Passive area and the Walkway area.

The Active area is a transition area between the individual building lots and the Park's passive area to provide access and

circulation for users. The main components comprise the playground, lakes, fountains, bridges and jogging track (refer figure 4).

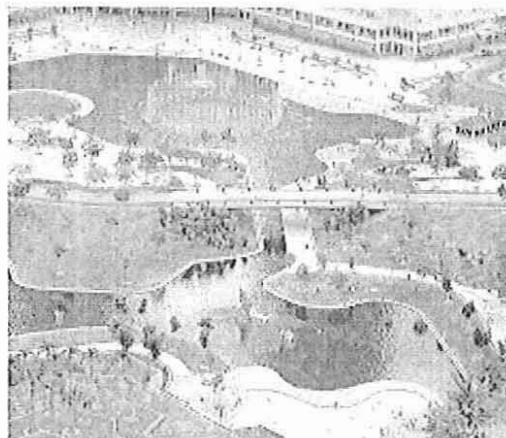


Figure 4:
Another interesting element is the decorative bridge, which takes centre stage of the green space. From this bridge, visually impaired persons are able to hear the sound from the Lake Symphony Fountain.

The Passive area is the inner area encircled by the active area and combines a blend of gentle contouring with softscapes. The Park interior includes tree canopies which provide cool but well-lit open space environments. The variety of vegetation emphasise indigenous plants, provide ornamentation, educational and recreational amenities. Some trees from the former Selangor Turf Club have been preserved and replanted at selected areas in the Park (refer figure 5).



Figure 5:

An accessible walk shaded by tree canopies.

The Walkway area acts as a pedestrian avenue added with resting areas at strategic locations to accommodate the users' needs. Shaded trees are planted along the Walkway area to add comfort and enhance the pedestrian circulation by providing shade and shelter. With varieties of vegetation along the Walkway area, they can expectantly offer texture, sound and fragrance to the visually impaired persons (refer figure 6).

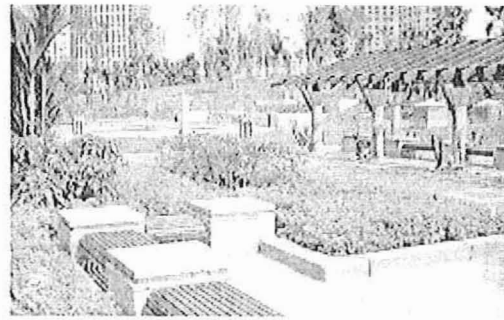


Figure 6:

Part of the green space is designed as haven for birds. Much research went into the selection of indigenous plant species whose fruits attract birds. These could produce pleasant sound for the visually impaired persons.

A number of landscape design guides have been published in specifying the techniques applied to attract wildlife (Emery, 1986; Gilbert, 1989; Baines and Smart, 1991). Besides birds, other common wildlife interests that can be found in green spaces are butterflies, bees, insects, squirrels and toads. Some plants are used to encourage wildlife in green spaces. These plants are grown in a supportive habitat need to provide food supplies from berries or flowers for all stages of the animals' growth; shelter, shade and closure for nesting.

v. The Findings

The questionnaire was structured based from the five barrier-free principles, i.e. Safety, Accessibility, Usability, Affordability and Aesthetics [as discussed in the previous paper: ENCOURAGING 'BARRIER-FREE BUILT ENVIRONMENT' IN A MALAYSIAN UNIVERSITY (Hussein, 2005)].

The first questionnaire was sent to Mrs. Noraishah Hussain, a project manager in KLCC, working with the Putrajaya Holdings. According to her, 'for a park setting around an urban area like KLCC, the plants chosen must be pedestrian friendly'.

According to Hussein (2002), among characters are to provide shade, screening and defines different spaces. Thorny, spiny, stinging and poisonous plants that produce unpleasant sap or cause allergies can be a considerable nuisance. In favour of the 'Accessible principle', it is important to ensure that plants are planted near ramps and walkways as guidance to the visually impaired persons. It is also possible to use plants to emphasize pavement edges but care must be taken in the choice and placement of these plants to avoid people tripping over. In providing texture for the sense of touch and smell, fragrant plants can be introduced at a scale of shrubs height and even include creepers as well as climbers.

The second questionnaire was an interview with Dr. Jacqueline Emmanuel. She is partially sighted since 1997 and working as a counsellor at the Malaysian Association for the Blind (MAB). The questionnaire started off with an access survey done around the Park. Along with that, a series of questionnaire had been asked to investigate constraints, issues and potential features in the Park as well as requirements for the visually impaired persons. Mainly she could appreciate plants by touching and smelling although not all plants produce scent. She also prefers to walk underneath shady trees while hearing the breeze blows through the foliage. She would use plants as guidance to walk if they were planted near the pathway or in a waist height planter box (refer figure 7). Furthermore she added the Park would be educational if plants were labelled with Braille (tactile signage).

The appropriate and imaginative selection of plants is critical to the success of any green spaces. Sadly it is often the poor selection, combination of plant material, maintenance and management that lets down the design of landscapes for them. There were a few issues and constraints discovered for the visually impaired persons when using green spaces. Later the author has suggested design requirements.



Figure 7:

Visually impaired persons prefer plants to be planted in a waist height planter box as guidance and appreciation.

Issues and Constraints in the Park

There are several issues and constraints discovered in the Park.

All hardscapes should be located to one side of walkways used by the public. Some of these could be grouped together with a change in paving surface texture and colour to give warning on approach. Tree grates which do not flush with the pavement could also be dangerous as they could cause the visually impaired person to slip (refer figure 8).



Figure 8:

Visually impaired people could slip over tree grate.

Looking into softscapes, trees must receive regular inspections and maintenance. It is important to obtain expert advice on the safety and health of specimens. Old and dying trees may need to be felled for safety reason. Tree branches, which are jointing out could cause danger to the visually impaired persons; a minimum clearance of 2 meters from the base of the tree to the first branch was noted in the guideline mentioned by Harris, et all (1997). (refer figure 9).



Figure 9:

Low branches hanging over walkways should be removed.

Research also proves that tree roots could cause unevenness in paths, particularly if the underlying substrate is compacted and the roots are therefore confined to a shallow zone just beneath the path surface (Stoneham and Thoday, 1996(a)). (refer figure 10 and 11)

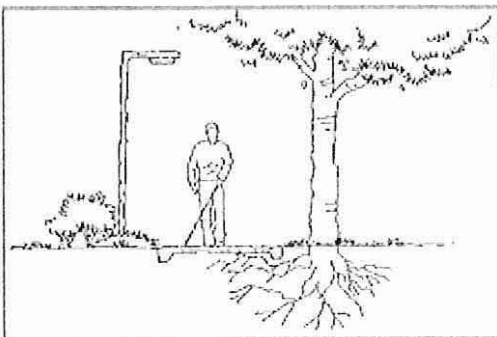


Figure 10:

Tree roots could cause unevenness in paths. This is unsafe for visually impaired persons.



Figure 11:

Tree roots which are jointing out could be hazardous.

Another constraint was the unexpected levels of changes which are dangerous for the visually impaired persons (refer figure 12).

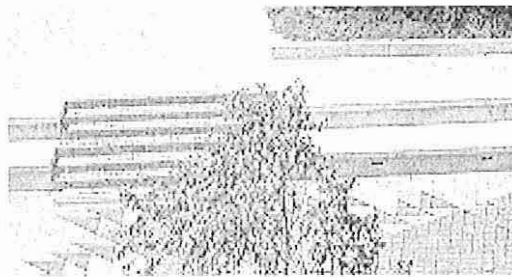


Figure 12:

Unexpected level of changes.

Requirements in the Park

The discussion for this section will be divided into two parts, namely hardscapes and softscapes.

i. Hardscapes.

The sense of touch is vital to people with visual impairments. Hardscapes such as signs with tactile should be in raised letters and characters should be used to allow visually impaired to feel the signs (refer figure 13). A clear system of signs should be used throughout the park, with a similar height and format at each change of direction.

As quoted by O'Connell and Spurgeon (1996), 'Information provided to visitors should be available in appropriate format (at least large prints but ideally Braille and cassette as well) and sitting of information points such as notice boards needs careful consideration'.



Figure 13:

A suitable dimension of information board with Braille (tactile signage) is required for direction.

Other examples of hardscapes are handrails and hard surfaces. Handrails should be bright in colour, to contrasting with the surroundings. A tactile warning surface should be incorporated into the floor at the top and bottom of the ramp or stairs (refer

figure 14). Ramps must have at least a gradient slope of 1:12 with non-slippery surfaces.



Figure 14:

Where there are ramps or stairs, warning guides should be installed when needed.

Unexpected levels of changes are hazardous and should not occur in the main line of the pedestrian walkway. Stairs should include at least two steps for safety reasons and always be easily visible (refer figure 15)

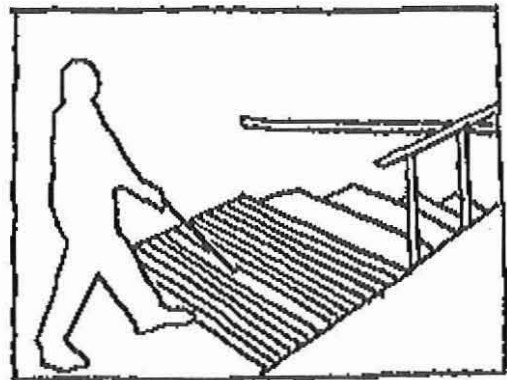


Figure 15:

Unexpected level of changes. Existing situations can be modified to forewarn the visually impaired person.

Walkways could be fitted with tactile clues (example Braille blocks) as route finders (refer figure 16). Large featureless paved areas in front of buildings should be avoided as these can cause glare problems for the visually impaired persons and make it difficult to distinguish entrances.

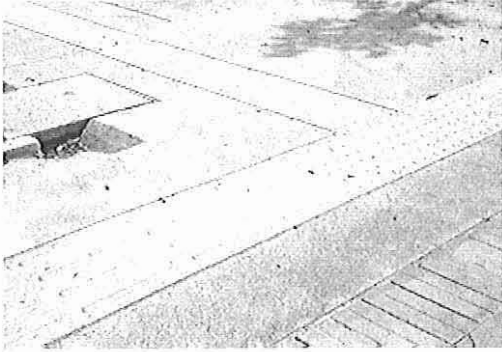


Figure 16:

The use of Braille guide blocks should be promoted and installed in green spaces.

ii. Softscapes.

'A good planting design relies on the designer having an understanding of the different roles that plants play' (Stoneham and Thoday, 1996(a)).

Referring to the above statement, Stoneham and Thoday mentioned that plant selection particularly for visually impaired persons must have significant criteria, i.e. scent (refer figure 17), texture (refer figure 18) and safety (refer figure 8). Together with those criteria, the author will suggest some common tropical plants.



Figure 17:

'For people who cannot share the visual enjoyment of a garden, scents are particularly significant' (Stoneham, and Thoday, 1996 (a))

Further to the above, it is important to consider plants and garden features, which appeal to all the senses. Scent is what most people think of when designing a garden for visually impaired persons and this aspect certainly gives pleasure to sighted people as well. Some distinctive trees with scents are kenanga, tembusu, chempaka, tanjung and kemboja (Fragrant Trees, 2000).

Shrubs could also contribute with their scented flowers. The strategic positioning of boundary trees and shrubs can reduce the noise from busy roads and filter the smell from a nearby rubbish area. They are namely, jasmine and melati (Ibrahim, 2000).

In addition to scented flowers, plants can be chosen for their aromatic foliage and bark, specifically kapur and kayu putih (Fragrant Trees, 2000). These can greatly extend the season of interest. Some can be used as markers in the landscape, for example to indicate seating or a change of direction.

'A more imaginative selection of plants should be encouraged, including the use of floral displays, scents and textural interest' (Stoneham and Thoday, 1996(a))

'The outdoors is full of different textures, particularly those with visual impairments, rely on these to interpret the environment' (Lucas, 1996)

Both of the statements above cited that plants can be selected with differing textures of leaves, barks and stems but need to be robust enough to withstand examination of touch and should not contain thorns or sap, which may irritate (refer figure 18).



Figure 18:

Visually impaired persons could also appreciate plants by touching the texture.

'Safety is an important concern for frail people and there is little sense in including highly poisonous or allergenic plants in a planting scheme' (Stoneham and Thoday, 1996(b)).

The above statement identified that visually impaired persons require greater attention to the safety in the planted landscape. Plants which are thorny, spiny, stinging and poisonous should be avoided. These characteristics refer to some plants, for example fishtail palm, pong pong and buta buta (Hussein, 2000).

Conclusion

It is not always realistic to design all areas of a green space to be accessible to everyone but this should never justify the segregation of disabled persons by the provision of one specific area, such as the notorious 'garden for the blind'. It is now widely acknowledged that such segregation runs contrary to the ideal of integration and that the demand from disabled persons is for facilities that provide interest for a broad range of people, without creating barriers for those with special needs. The recent fashion for 'sensory landscapes' should be a way of introducing much greater interest and variety into parks for everyone to enjoy and should not result in 'gardens for the disabled' under a different

heading. It is hoped that with careful planning, regular maintenance, efficient management and sensitive approaches, all green spaces will be more accessible, friendly and safe to as many people as possible. In a way, if these practises are applied, green spaces will offer advantage not only to the disabled persons but for all users, including children, elderly people, pregnant women and parent with strollers.

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